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EXAMINER	
HAMILTON, C	
ART UNIT	PAPER NUMBER

1752

DATE MAILED: 10/18/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/481,654

Applicant(s)

LAWTON ET AL.

Examiner

Cynthia Hamilton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 1/11/00, 8/21/00.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-83 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-83 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

1. This application is a Reissue application of Patent No. 5,707,780. There are 83 claims present. Only two were present in the parent and are here corrected due to an inadvertent error. Claims 3-83 are all new and broader than the claims issued in Patent No. 5,707,780.

2. The original patent, or an affidavit or declaration as to loss or inaccessibility of the original patent, must be received before this reissue application can be allowed. See 37 CFR 1.178.

3. Two reissue declarations have been filed in this application. One is filed by the assignee and the other by the inventors. As the claims presented in the Reissue application are broader than the claims of the patent the assignee declaration is insufficient for filing the Reissue application. Therefore, only the reissue Declaration filed by the inventors has been considered. See particularly MPEP 1412.03.

4. This application is objected to under 37 CFR 1.172(a) as lacking the written consent of all assignees owning an undivided interest in the patent. The consent of the assignee must be in compliance with 37 CFR 1.172. See MPEP § 1410.01.

A proper assent of the assignee in compliance with 37 CFR 1.172 and 3.73 is required in reply to this Office action.

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.



7. Claims 3-25 are (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: In the original claims and specification do not disclose the broad compositions of instant claim 3.

- a. There is no disclosure to a composition without the presence of a photo-generating acid precursor.
- b. There is no disclosure to a composition with curable materials that is not a photohardenable composition.
- c. There is no disclosure to a composition with the broad mixture of a) a low-viscosity, fast-curing cationically polymerizable component and b) a high-viscosity, slow-curing cationically polymerizable component. The original disclosure deals with a mixture of low-viscosity, fast-curing epoxy resin with a high-viscosity, slow-curing epoxy resin in col. 4, lines 45 to col. 5, lines 47. There is no disclosure to a broader class of cationically polymerizable components as claimed.
- d. There is no disclosure to a composition with a mixture of a) low-viscosity, fast-curing epoxy resin and b) a high-viscosity, slow-curing epoxy resin which is generic to "at least one radically polymerizable component. The original disclosure and original claims are narrower and limited to blends of free radical polymerizable substances as found in the original claims. There is no disclosure to the much broader "at least one radically polymerizable component" with respect to the mixture of a) and b).

With respect to claims 4-25, the instant compositions are too broad in at least one of a., b., c. or d. above.

8. Claims 5-9 are (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is

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not supported by the prior patent is as follows: With respect to claims 5-9, the physical limitations to viscosity and percentage present are originally disclosed only with respect to epoxy resins and not to the broader class of cationically polymerizable components like vinyl ethers.

9. Claims 10 and 23-25 (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: The original disclosure to a mixture of epoxy resins with mixture of low-viscosity, fast-curing epoxy resin with a high-viscosity, slow-curing epoxy resins is also limited to blends of acrylates wherein if a "mono-functional acrylate" is present there is also required present a "multi-functional acrylate monomer" as set forth in col. 4 of the original disclosure. This is also inclusive of such mono-functional acrylate monomers" as those in instant claim 23. There is no disclosure to said mixture with limits only to a radically polymerizable compound having hydroxyl functionality as found in instant claim 24.

10. Claim 24 is (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: There is no broad disclosure to the generic grouping of a composition with cationic mixture of varying viscosity and cure rate and a radically polymerizable compound having hydroxyl functionality. The only disclosure is to a mono acrylated radically polymerizable component which is hydroxylated, ie caprolactone acrylate.

11. Claims 26-38 are (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C.

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251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: There is no broad disclosure to a mixture of cationically polymerizable resins consisting essentially of at least two epoxy resins. The use of mixture and consisting essentially indicates that other cationically polymerizable components are given or that in some way this is more generic than the mixtures originally disclosed. There is no support for the broader disclosure of mixture of cationically polymerizable resins wherein there is also a mixture of two epoxy resins as given in claim 26.

12. Claims 26, 31-33, 35-38 are (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: The original disclosure to a mixture of epoxy resins with mixture of low-viscosity, fast-curing epoxy resin with a high-viscosity, slow-curing epoxy resins is also limited to blends of acrylates wherein if a "mono-functional acrylate" is present there is also required present a "multi-functional acrylate monomer" as set forth in col. 4 of the original disclosure. The broader generic class of such epoxy mixtures with mono-functional acrylate monomers without multi-functional acrylate monomers is not found in the original disclosure or claims.

13. Claim 36 is (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: There is no broad disclosure to the generic grouping of a composition with cationic mixture of varying viscosity and cure rate and a radically polymerizable compound having hydroxyl functionality. The only disclosure is to a mono acrylated radically polymerizable component which is hydroxylated, ie caprolactone acrylate.

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14. Claims 39-59 (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: In the original claims and specification do not disclose the broad compositions of the methods in instant claim 39.

- a. There is no disclosure to a composition without the presence of a photo-generating acid precursor.
- b. There is no disclosure to a composition with curable materials that is not a photohardenable composition.
- c. There is no disclosure to a composition with the broad mixture of a low-viscosity, fast-curing cationically polymerizable component and b) a high-viscosity, slow-curing cationically polymerizable component. The original disclosure deals with a mixture of low-viscosity, fast-curing epoxy resin with a high-viscosity, slow-curing epoxy resin in col. 4, lines 45 to col. 5, lines 47. There is no disclosure to a broader class of cationically polymerizable components as claimed. There is no disclosure to a composition with a mixture of a) low-viscosity, fast-curing epoxy resin and b) a high-viscosity, slow-curing epoxy resin which is generic to "at least one radically polymerizable component. The original disclosure and original claims are narrower and limited to blends of free radical polymerizable substances as found in the original claims. There is no disclosure to the much broader "at least one radically polymerizable component" with respect to the mixture of a) and b).

With respect to claims 40-59, the instant compositions are too broad in at least one of a., b., or c. above.

15. Claims 41-45, 48-49, 51-52, and 54 are (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and

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(2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: With respect to 41-45, 48-49, 51-52, and 54, the physical limitations to viscosity and percentage present are originally disclosed only with respect to epoxy resins and not to the broader class of cationically polymerizable components like vinyl ethers.

16. Claim 46 is (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: The original disclosure to a mixture of epoxy resins with mixture of low-viscosity, fast-curing epoxy resin with a high-viscosity, slow-curing epoxy resins is also limited to blends of acrylates wherein if a "mono-functional acrylate" is present there is also required present a "multi-functional acrylate monomer" as set forth in col. 4 of the original disclosure. This is also inclusive of such mono-functional acrylate monomers" as those in instant claim 23. There is no disclosure to said mixture with limits only to a radically polymerizable compound having hydroxyl functionality as found in instant claim 24.

17. Claims 60-79 are (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: There is no disclosure of a composition which is photohardenable in the original disclosure without the presence of a photo-generated acid precursor being present, thus the generic method of making a photohardenable composition as set forth in instant claim 60 is not disclosed originally nor is the mixing of a generic free radical polymerization substance without being specific to an acrylate blend comprised of an multifunctional acrylate monomer. The use of a mono functional acrylate without specificity of the multifunctional acrylate as in claim 65 is not originally disclosed.

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18. Claim 81 is (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: The methods of forming three-dimensional articles in the original disclosure are limited to the solid imaging process as set forth in col. 1, lines 15-21 wherein photohardenable materials are polymerized layer by layer in an imagewise fashion and the exposure by actinic radiation is the imagewise fashion used. This is again found in col. 2, lines 20-24. There is no disclosure to the more generic group of processes involving molding to fit a hollow object or heat molding by injection which is fathomable of a composition as found in claim 80. There is no original generic disclosure to all methods of forming a solid from the composition given.

19. Claim 83 is (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: There is no original disclosure to the generic formation in any manner of an article from the composition of claim 80. There is only disclosure to forming articles via solid imaging techniques as given.

20. Claims 18 and 54 are (1) rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention and (2) under 35 U.S.C. 251 as being based upon new matter added to the patent for which reissue is sought. The added material which is not supported by the prior patent is as follows: There is no support found in the original claims or specification for the blend of radically polymerizable monomers to be present in a larger quantity than the mixture of cationically polymerizable components as the ratio ranging from 3 to 10 would indicate. The examiner upon looking at the only

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working examples that fit the instant invention set forth believes this ration is stated in the reverse of what is desired by applicants. Please view claim 1 and claim 80 to see the reverse being claimed.

21. Claims 1-2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In line 7 of claim 1 and line 14 of claim 2, reference is made to "said one" but there are two "one" references preceding each instance making antecedent basis for "said one" unclear. The two are "...one which polymerized as a slower rate..." and "...at least one other epoxy resin present...". Clarification as to which is "said one" is needed to remove this problem.

22. Claim 81 provides for the use of the composition of claim 80, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced. The step of "processing" with end result "to form a solid image" is not an active, positive step delimiting how this process is to be practiced.

23. Claim 81 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

24. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

26. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

27. Claims 3, 5 –6, 19-21, 60, and 72-76 are rejected under 35 U.S.C. 102(b) as being anticipated by Markovitz (4,656,090) as evidenced by Poutasse (6,117,536) and RN 25085-98-7 and Epel et al (3,742,086). Examples 26-28 of Markovitz anticipate applicant's compositions as set forth in instant claims 3, 5 –6, 19-21, 60, and 72-76. The epoxy novolac DEN 438 is as evidenced by Poutasse in col. 6, lines 8-20, as an epoxide functionality of 3.6, and an viscosity of 20,000 to 500,000 cps, ie 200 to 500 poise at about 52 degrees C, which at 25 degrees C would be much higher. The epoxy resin ERL 4221 is identified by Markovitz to be 3,4-epoxycyclohexylmethyl-(3,4-epoxy) cyclohexane carboxylate and is the same epoxy as Cyracure Resin UVR 6105 set forth in their Table in instant col. 14, as well as being identified by the same Registry Number as evidenced by RN 25085-98-7. Vinyl toluene and para-methyl styrene are known in the art to be radically polymerizable. Epel et al evidence this knowledge in the art in col. 3, lines 18 to 35, wherein vinyl toluene is specifically listed and alpha-methyl styrene is listed. Thus, with respect to instant claims 3, 5 –6, 19-21, 60, and 72-76, the compositions of Examples 26-28 of Markovitz inherently anticipate the compositions and methods of the instant invention wherein DEN 438 is the high viscosity, slow curing cationically polymerizable material and structurally similar to EPON 1050 found instant col. 14 and ERL 4421 is the low-viscosity, fast curing cationically polymerizable component recognized as the same

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compound as UVR 6105 also found in col. 14. The examiner notes that Poutasse is of a more recent date than applicant's filing date but it is cited to show the art known physical characteristics of a commercial resin and is such not restricted to such a filing date. It is used only to evidence that which is inherent in DEN 438 thus is properly used here.

28. Claims 18, 30, 54, 71, 80-83 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 18, is found "... the ratio... is from 3 to 10...". The same is found in claims 30, 54, 71 and 80. The examiner is not sure what is meant by this terminology. Is the applicant claiming only the ratio of 3 parts of something to 10 ten parts of the other? Is the applicant trying to claim 3 to 10 parts of one to one part of the other therefore a range of ratios? This wording does not clearly represent a ratio of one kind or the other. Is it 3-10 parts/ 1 part or 3 parts/10 parts? Thus, this claim language is confusing.

29. Claims 10-18, 20, 24, 26-38, 46-54, 56, 63-71, 73, 80-83 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have used the terms "mono-functional acrylate", mono-functional acrylate", and "tri-functional acrylate" through most of claims 10-18, 26-38, 46-54, 56, 63-71, 80-83 without explaining what function was being counted. If it is acrylate groups, this is not defined so. In claims 20, 32, 73, and 56, functionality is referenced with respect to an epoxy phenolic novolac resin and again not defined. In claims 24, and 36, reference is made to "hydroxyl functionality". In each instance, it is unclear if "function" adds any meaning to the group hydroxyl, acrylate or epoxy. There is no definition to guide the worker in the art here. Only "hydroxyl functionality" is specific to some group as written but still it is unclear if the term is intended to extend the meaning beyond hydroxyl as with acrylate perhaps meaning methacrylate as well. Thus, with respect to claims 10-18, 20, 24, 26-38, 46-54, 56, 63-71, 73, 80-83, the limits of the terms are unclear.

30. Claims 3-25, 39-59, 80-83 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The terms "high-viscosity", "fast-curing", "low-viscosity" and "slow-curing" are in these claims but they are not clearly defined as independent terms in the specification but instead as used in claims 1-2 in relation to two epoxy resins. Without the specific tie to each other as one lower than the other or faster than the other, the examiner is unsure what the limits of these terms are in view of the specification. Thus, claims 3-25, 39-59, 80-83 are indefinite.

31. Claims 12-13, 15-16, 28-29, 48-49, 51-52, 68-69, 80-83 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim twelve is found "...wherein the total amount of mono-functional acrylate monomers to the total amount of multi-functional acrylate monomers present in the composition, on a parts by weight basis relative to the total composition, is 0.12 to 0.9..." Similar working was found in claims 13, and claims 15-16, 28-29, 48-49, 51-52, 68-69, and 80-83. It is unclear what is meant here. The specification in col. 4 lines 22-35 refers to the ratio of mono-acrylate to triacrylate (or other multi-functional acrylate). However, the claim language refers to "total amount...to the total amount...is 0.12 to 0.9." That is not a ratio range as set forth in the specification but indicates monoacrylates are 0.12 to triacrylates at 0.9. Further, reference is made to link the entire set of numbers to the "weight basis relative to the composition" which really confuses the matter if the ratio is supposed to be between the acrylates. The examiner plain just does not understand this language. The ratio to the whole composition or between acrylates or is the number range given to the ratio of the acrylates instead of the individual parts of the ratio? There is no way for this examiner to understand this language. She strongly recommends using the language found in claim 1 which while does not state ratio is such as set forth by the specification because 0.12 to 0.9 parts of one to 1 part of another is the same as a ratio range.

32. Claims 3-4, 7, 10-12, 14-15, 17, 21, 26-28, 33-34, 60-61, 63-68, 70, 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsao et al (4,156,035). See Examples in Tsao et al. The compositions used by Tsao et al inherently possess the properties required in instant claims 3-4, 7, 10-12, 14-15, 17, 21, 26-28, 33-34, 60-61, 63-68, 70, and 74. The two epoxy resins inherently match the viscosity and cure requirements. The diglycidyl ether of Bis phenol A is held to be inherently more viscose and slower curing than the epoxycyclohexane carboxylate compound which is used as a diluent thus diluting thus less viscose. Example 1 and Table 1 set forth the mixed acrylate

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systems and mixed epoxy systems as both photoacid generator (sulfonium compound) and free radical initiator (acetophenone compound).

33. Claims 22, 38 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsao et al (4,156,035) as applied to claims 4, 26 and 61 above, and further in view of Smith (4,250,053). With respect to instant 22, 38 and 62, Tsao et al discloses all the instant invention with the exception of specific photosensitizers. However, Smith teaches iodonium and sulfonium photoinitiators are naturally sensitive to only a small portion of the electromagnetic spectrum and that 1,6-diphenyl-1,3,5-hexatriene and 1,8-diphenyl-1,3,5,7-octatetraene can act a sensitizing dyes to broaden the range of the spectral sensitivity within which the onium salts will be functional. See particularly Abstract, SUMMARY OF THE INVENTION, and col. 7, lines 63 and 68. Thus, the use of these sensitizing dyes with the compositions of Tsao et al would have been *prima facie* obvious for this reason.

34. Claims 3-4, 8, 10-17, 21, 26-30, 33-34, 60-61, 63-71, 74, 78-79 are rejected under 35 U.S.C. 102(b) as being anticipated by Land (4,694,029) as evidenced by RN 25085-98-7. See Example 3, compositions 5-6 and Example 5, compositions 2-3. The compositions of Land inherently possess the properties required in instant claims 3-4, 8, 10-17, 21, 26-30, 33-34, 60-61, 63-71, 74, 78-79. UVR-6110 is identified by RN 25085-98-7 as the same compound as Cyacure Resin UVR-6105 used by applicants. Epon 828 is inherently the higher viscosity, slower reacting epoxy when matched with UVR-6110.

35. Claims 22, 38 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Land (4,694,029) as evidenced by RN 25085-98-7 as applied to claims 4, 26 and 61 above, and further in view of Smith (4,250,053). With respect to instant 22, 38 and 62, Land (4,694,029) as evidenced by RN 25085-98-7 discloses all the instant invention with the exception of specific photosensitizers. However, Smith teaches iodonium and sulfonium photoinitiators are naturally sensitive to only a small portion of the electromagnetic spectrum and that 1,6-diphenyl-1,3,5-hexatriene and 1,8-diphenyl-1,3,5,7-octatetraene can act a sensitizing dyes to broaden the range of the spectral sensitivity within which the onium salts will be functional. See particularly Abstract, SUMMARY OF THE

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INVENTION, and col. 7, lines 63 and 68. Thus, the use of these sensitizing dyes with the compositions of Land (4,694,029) as evidenced by RN 25085-98-7 would have been *prima facie* obvious for this reason.

36. Claims 3-4, 8, 21, 39-40, 44-45, 57, 60-61, 63-64, and 74 are rejected under 35 U.S.C. 102(e) as being anticipated by Steinmann et al (5,476,748) or under 35 U.S.C. 102 (b) as being anticipated by Steinmann et al (CA 2,111,718). See particularly Examples 12-14 in either Steinmann et al which are derived from the same Swiss application. The examiner notes no mono acrylate is present but mixed epoxy systems, and blends of di and tri acrylates are present. These compositions inherently possess the physical properties set forth for the instant epoxy mixtures.

37. Claims 22, 59, 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinmann et al (5,476,748). as applied to claims 4, 40 and 61 above, and further in view of Smith (4,250,053). With respect to instant 22, 38 and 62, over Steinmann et al (5,476,748) discloses all the instant invention with the exception of specific photosensitizers. However, Smith teaches iodonium and sulfonium photoinitiators are naturally sensitive to only a small portion of the electromagnetic spectrum and that 1,6-diphenyl-1,3,5-hexatriene and 1,8-diphenyl-1,3,5,7-octatetraene can act a sensitizing dyes to broaden the range of the spectral sensitivity within which the onium salts will be functional. See particularly Abstract, SUMMARY OF THE INVENTION, and col. 7, lines 63 and 68. Thus, the use of these sensitizing dyes with the compositions of over Steinmann et al (5,476,748) would have been *prima facie* obvious for this reason.

38. Claim 80 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ohkawa et al (EP 0 360 869). With respect to instant claim 83, "An article formed from the composition of claim 80" is the entire claim. There is no requirement that the composition of claim 80 be a part of the article formed only that the article is from the composition. Applicants teach their compositions to be cured into different compositions to form three dimensional models. Thus, the instant cured article of the method of instant claim 81 does not contain the composition of claim 80 but is made formed from it by the process. Thus, any formation of articles from such models would also be formed from the compositions of claim 80. Ohkawa et al does

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not disclose the composition of claim 80 but does disclose the optically molded objects from such processes using similar materials are used to make casting molds thus, a mold is formed from the molded object then the molded object is dispensed with and the mold is used to "form" articles of another unrelated material. Thus, the processes of Ohkawa make molded articles not of the original article but cast from the mold made from the original model which anticipate or if viewed as a product made by a process are essentially the same regardless of the model used to make the cast mold. See particularly MPEP 2113. Thus, the article of claim 80 is anticipated or made obvious by the processes and disclosure of Ohkawa et al for this reason. The final article is formable from any molded material. In Ohkawa et al see particularly first paragraph under Prior Art, pages 1 and 2.

39. Claims 3-5, 8-9, 21, 39-41, 44-45, 54, 57, 60-61, 63-64, 74-75, 78-79 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohkawa et al (EP 0 360 869). In Ohkawa et al, see Examples 5-6 and 10 wherein the mixture of epoxides inherently possess the properties of cure and viscosity set forth in the instant claims. Ohkawa et al do not disclose using monofunctional acrylates in these examples.

40. Claims 3, 5-7, 19, 60, 65 are rejected under 35 U.S.C. 102(b) as being anticipated by Shipley (4,169,732). Example 1 wherein epichlorhydrin-bisphenol A epoxy resin, solid epoxy novolac resin and acrylic acid are mixed into a reaction solution the compositions and process of Shipley anticipate the instant invention as set forth in instant claims 3, 5-7, 19, 60, 65. The epoxides inherently have the viscosity and cure rate limitations of the instant claims.

41. Claims 3-38 are rejected under 35 U.S.C. 251 as being an improper recapture of broadened claimed subject matter surrendered in the application for the patent upon which the present reissue is based. See *Hester Industries, Inc. v. Stein, Inc.*, 142 F.3d 1472, 46 USPQ2d 1641 (Fed. Cir. 1998); *In re Clement*, 131 F.3d 1464, 45 USPQ2d 1161 (Fed. Cir. 1997); *Ball Corp. v. United States*, 729 F.2d 1429, 1436, 221 USPQ 289, 295 (Fed. Cir. 1984). A broadening aspect is present in the reissue which was not present in the application for patent. The record of the application for the patent shows that the broadening aspect (in the reissue) relates to subject matter that applicant previously surrendered during the prosecution of the application. Accordingly, the narrow scope of the claims in the

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patent was not an error within the meaning of 35 U.S.C. 251, and the broader scope surrendered in the application for the patent cannot be recaptured by the filing of the present reissue application.

In parent application 08-476,482, applicants surrendered claims drawn to a photohardenable compositions comprised of a mixture of cationically polymerizable organic substances has at least two epoxy functional resins wherein one of the at least two epoxy functional resins polymerizes at a slower rate and has a higher neat viscosity than the other and is present at a concentration in the mixture of from 5 to 25% by weight, a blend of free radical polymerizable substances, a photogenerating acid precursor and a free radical initiator in response to art rejections. The limitation of water was added to over come the art rejection as set forth in Paper No. 6 of that application. Declarations were submitted showing control of the water content of the composition was paramount and the claims were amended to change water from an optional component to a mandatory component. The recapture rule bars the patentee from acquiring claims that are, in all aspects, of the same scope as, or broader in scope than those claims canceled. See particularly *Ball*, 729 F.2d. at 1436, 221 USPQ at 295. Narrower claims given up by applicants include limitations to (1) the slower polymerizing, higher neat viscosity epoxy resin having a neat viscosity of at least 1000 poise at 25 degrees C, (2) the free radical polymerizable organic substances being a blend containing at least one mono-functional acrylic monomer and at least one multi-functional acrylic monomer wherein the concentration of the mono-functional monomer is from 0.12 to 0.90 parts by weight than that of the multi-functional monomer, (3) the concentration of the monofunctional monomer is from 0.27 to 0.58 parts by weight of the multi-functional monomer, (4) the ratio of the mixture of cationically polymerizable substance compared to the weight of the blend of the free radical polymerizable substances is from 3 to 10, and (5) the monofunctional acrylic monomer is caprolactone acrylate.

Instant claims 3 -38 are all of the same or broader scope than the claims given up when applicants added water as an essential component in Paper No. 6 of parent application 08-476,482.

42. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *Lenke et al* (5,223,584) discuss the viscosity of Epon 828 and UVR 6110.


43. *Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Hamilton whose telephone number is 703 308 3626. The examiner can normally be reached on Monday-Friday.*

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 703 308 2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703 305 7718 for regular communications and 703 305 3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305 0661.

C. Hamilton
September 24, 2000
After review
October 17, 2000



CYNTHIA HAMILTON
PRIMARY EXAMINER